ATTACHMENT B

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

The paragraph spanning lines 21-24 of page 3 has been amended as follows:

It is [desirably] desirable to epitaxially fabricate a variety of types of structures or devices, using a given epi material system, grown on a given substrate. Such epitaxially fabricated devices include electronic devices, such as transistors and integrated circuits, and optoelectronic devices, such as semiconductor lasers, light-emitting diodes, and photodetectors.

The paragraph spanning lines 9-10 of page 7 has been amended as follows:

Fig. 3A, B, C, D, and E are schematic illustrations of a [the] process employed to fabricate an alternative substrate in accordance with an embodiment of the present invention;

The paragraph spanning lines 14-27 of page 8 has been amended as follows:

According to the present invention, an alternative substrate has a base layer and a thin film layer physically bonded to the substrate. Two basic approaches to providing an alternative substrate for defect-free (or reduced defect) epitaxial [grown] growth are disclosed herein: the *floating substrate approach* and the *relaxed substrate approach*, which are described in further detail below. Depending on the approach employed, the adaptive thin film layer either (a) has a lattice constant different from that of the target epi material system, but with a sufficient degree of lattice flexibility during epitaxial growth of the target material system, due to the [presense] presence

of a floating interfacial bonding layer, to permit the lattice constant of the adaptive thin film layer to adjust to that of the target system, thereby providing lattice match and reducing lattice mismatch threading dislocations; or (b) the thin film layer, which is initially strained and has lattice mismatch with the target material system, has its in-surface lattice constant adjusted by relaxation before epi growth so that it has a lattice constant very close to that of the target material system. In the second approach, the thin film layer may be bonded to a base layer with or without an interfacial bonding layer, in alternative embodiments.

The paragraph spanning lines 11-15 of page 11 has been amended as follows:

Substrate or base layer 21 can be formed from any commercially available high quality substrate material, such as Si, GaAs, InP, GaP, or the like. However, the thin film adaptive layer 22 can be made from either the same material or a variety of other materials as the base layer 21. Thin adaptive layer 22 is preferably a semiconductor layer to [facility] facilitate growth thereon of semiconductor based epi layers and devices in epi layer 24.

The paragraph spanning lines 3-13 of page 15 has been amended as follows:

In one embodiment, the result shown in Fig. 4C may be used as an alternative substrate, after appropriate treating of the top (exposed) surface of thin adaptive layer 403. In this case, carrier substrate 400 serves as the support. However, preferably, thin adaptive layer 403 is bonded to a new (third), bulk material support substrate 410, as shown in Fig. 4D. In this embodiment, thin adaptive layer 403 is bonded to a new bulk substrate 410, which can be a prior art semiconductor substrate or a dielectric crystal substrate that has a thermal expansion coefficient very close to that of the

thin adaptive layer 403 (to reduce fracturing or damage during heating). The final step is to remove the carrier substrate 400 and bonding layer 406. This may be done by chemical etching, or by mechanical removal by melting the bonding layer 406. The exposed surface of thin adaptive layer 403, after layers 400 and 406 are removed, may then be suitably treated to permit epitaxial growth thereon of the target material system.

In the Claims:

Claims 6 and 12 have been amended as follows:

6. (once amended) The substrate of claim 1, wherein the thin film adaptive crystalline layer comprises InGaAs with an In composition between approximately 15% and approximately 45%.

12. (once amended) The substrate of claim [10] 11, wherein the single layer of the same material or the multiple layers of different materials comprise

Bi, In, Pb, Sn, Al, or Ni; or

a metal alloy; or

inorganic materials.